

U.S.S.N. 09/976,082

The Commissioner is hereby authorized to charge Deposit Account No. 50-0484 the amount of \$110.00 for the one-month extension fee.

In The Drawings

Figure 1 has been amended and a redline copy of the drawing change is hereby submitted for the Examiner's approval.

In The Specification

Paragraph 005 has been amended as follows:

A1  
005 One of the more important components in the sputter chamber is the clamp ring which serves two purposes during a sputter process. The first purpose is to clamp the wafer to the pedestal heater. The clamp ring holds the wafer in place on the pedestal when a positive gas pressure is applied between the heater and the pedestal such that heat can be efficiently conducted from the heater to the wafer. The second purpose served by the clamp ring is to allow a predetermined flow of argon to leak from under the wafer into the sputter chamber. The clamp ring is generally constructed in a

*A1*  
*Contd*

circular shape with an oriented cut-out to match a wafer's flat contour. A hood is built into the clamp ring and is used for shadowing purpose to protect the lip of the clamp ring from being coated by the sputtered metal particles. The lip portion also allows the force of the clamp ring to be evenly distributed around the wafer.

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Paragraph 006 has been amended as follows:

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*A2*

006        A cross-sectional view of a typical sputter chamber 10 is shown in Figure 1. Sputter chamber 10 is constructed by a stainless steel chamber body 12 that is vacuum-tight, a sputter target 16 of W, TiW or Sn, a wafer holder 20 equipped with a heater 22, a wafer lift mechanism 24, a wafer port 28, a pumping port 32, a clamp ring 30 and a chamber shield 34. A DC power supply 25 is connected to a target 16 and a conductive part of the chamber, such as the chamber wall 18 or chamber shield 34, thereby establishing a voltage potential between the grounded chamber wall 18 and the target 16. A DC bias circuit 23 is connected to the clamping ring and thus applies a DC bias to the wafer (not shown). The hood 36

A2  
cont'd

of the clamp ring 30 protects the tip 38 from being coated by the sputtered particles. A perspective view of the same sputter chamber 10 is shown in Figure 2.

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Paragraph 007 has been amended as follows:

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A3

007 As shown in Figure 1, the chamber shield 34 is another important component in the sputter chamber 10. It forms a seal between the clamp ring 30 and the chamber body 12 such that sputtered particles from the sputter target 16 do not contaminate the chamber wall 18 during a sputtering process. It should be noted that, during the sputtering process, the wafer pedestal 20 is in a raised position with the tip portion 38 of the clamp ring 30 touching the heater 22 on the pedestal 20. In order to achieve a tight seal from the chamber wall 18, a small gap is normally maintained between the clamp ring 30 and the chamber shield 34. In a typical metal sputtering process where a W, TiW, Sn or other metal is used in the sputter chamber, the emission of sputtered particles of the metals is shaped with a forward cosine distribution such that a more desirable deposition process in which